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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, TU MINH

ART UNIT

PAPER NUMBER

3748

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/572,194	Applicant(s) LINGENS ET AL.	
	Examiner TU M. NGUYEN	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 May 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. An Applicant's Amendment filed on May 17, 2010 has been entered. Claims 13, 19, 29, and 31 have been amended. Overall, claims 13-31 are pending in this application.

Drawings

2. The formal drawing of Figure 1 filed on May 17, 2010 has been approved for entry.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 13-26 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi (U.S. Patent 5,966,928) in view of Levendis et al. (U.S. Patent 5,253,476).**

Re claims 29 and 31, as shown in Figures 1-2, Igarashi discloses a filter (10) of a prior art, comprising:

- a filter wall (11) dividing a clean gas side (24) and a raw gas side (14) of the filter and configured to separate out particles (combustible soot particles) and particle constituents (ashes)

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from a stream of fluid (exhaust gas) passing flowing from the raw gas side through the filter wall and to enable the particles to be removed in a regeneration process; and

- a receiving device (68) located downstream of at least a portion of the filter wall configured to receive a flow of fluid (air from tank (S)) from the clean gas side of the filter therethrough and to receive and hold the particle constituents, the filter wall (11) and receiving device (68) arranged such that the flow of fluid passing through the filter wall forces the particle constituents into the receiving device.

Igarashi, however, fails to disclose that the flow of fluid is pulsed so that the flow of the fluid is passed through the filter wall from the raw gas side.

As shown in Figure 1, Levendis et al. disclose a pulsed, reverse-flow, regenerated diesel trap capturing soot, ash, and PAH's, comprising a soot filter (14), a compressed air source (16), and an electric burner (24). As indicated in the Abstract, Levendis et al. teach that it is conventional in the art to pulse the compressed air through the soot filter to separate the soot particle from the filter, which are burned in the electric burner. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Levendis et al. in the filter disclosed by Igarashi, since the use thereof would have been routinely practiced by those with ordinary skill in the art to reliably and effectively remove harmful soot and ash emissions from an exhaust gas stream.

Re claim 30, in the filter of Igarashi, the receiving device (68) is removably connectable to the filter wall.

Re claims 13 and 19, as shown in Figure 1, Igarashi discloses a method for operating a filter (10) of a prior art, the method comprising:

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- forcibly passing a stream of a fluid (exhaust gas) through a filter wall (11) of the filter from a raw gas side (14) to a clean gas side (24) of the filter so as to separate out particles (combustible soot particles) and particle constituents (ashes) from the stream, wherein the particles and particle constituents are collected by the filter wall (11) on the raw gas side (14); and

- performing (reverse cleaning and burning of soot particles (lines 1-28 of column 2)) a regeneration process on the filter during operation of the filter to remove particles from the filter wall and moving particle constituents not removed from the raw gas side of the filter by the regeneration process to a receiving device (68) disposed downstream of at least a portion of the filter by forcibly passing a flow of fluid (pressurized air) from the clean gas side through the filter so that the particle constituents are carried by the flow of fluid to the receiving device.

Igarashi, however, fails to disclose that the flow of fluid is pulsed so that the flow of fluid is passed through the filter wall from the raw gas side.

As shown in Figure 1, Levendis et al. disclose a pulsed, reverse-flow, regenerated diesel trap capturing soot, ash, and PAH's, comprising a soot filter (14), a compressed air source (16), and an electric burner (24). As indicated in the Abstract, Levendis et al. teach that it is conventional in the art to pulse the compressed air through the soot filter to separate the soot particle from the filter, which are burned in the electric burner. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Levendis et al. in the method disclosed by Igarashi, since the use thereof would have been routinely practiced by those with ordinary skill in the art to reliably and effectively remove harmful soot and ash emissions from an exhaust gas stream.

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Re claim 14, in the method of Igarashi, the particles include soot and the particle constituents includes ashes.

Re claim 15, in the method of Igarashi, the regeneration process is performed continuously during operation of the filter.

Re claim 16, in the method of Igarashi, the moving of the particle constituents is performed continuously during operation of the filter.

Re claim 17, in the method of Igarashi, the fluid is a gas (pressurized air).

Re claim 18, in the method of Igarashi, the filter is a particle filter (10) for an internal combustion engine (diesel engine).

Re claim 20, in the method of Igarashi, the fluid stream (pressurized air) is forcibly passed through the filter so that the particle constituents are carried by the fluid to the receiving device is imparted with a pulsating flow to move the removed particle constituents to the receiving device (see the Abstract of Levendis et al.).

Re claims 21-22, in the method of Igarashi, the forcibly passing a stream of fluid through the filter so that the particle constituents are carried by the fluid to the receiving device includes feeding a pressurized medium into the filter on the raw gas side to move the removed particle constituents to the receiving device, wherein the pressurized medium is pressurized air (see the Abstract of Levendis et al.).

Re claim 23, in the method of Igarashi, a portion of the fluid stream (pressurized air) flows through the receiving device (68).

Re claim 24, in the method of Igarashi, the receiving device includes a regenerable filter surface (68).

Re claim 25, in the method of Igarashi, the forcibly passing a stream of fluid (pressurized air) through the filter so that the particle constituents are carried by the fluid to the receiving device (68) includes a step of passing a medium (pressurized air) that moves the removed particle constituents to the receiving device through the receiving device and out of a flow outlet leading out of the receiving device and into the clean gas side.

Re claim 26, in the method of Igarashi, the forcibly passing a stream of fluid through the filter so that the particle constituents are carried by the fluid to the receiving device includes closing (valve (92)) an outlet leading out of the clean gas side of the filter and passing a medium (pressurized air) that moves the removed particle constituents to the receiving device through the receiving device and out of a flow outlet leading out of the receiving device.

Re claim 28, in the method of Igarashi, the regeneration process is performed thermally (see lines 25-28 of column 2).

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi in view of Levendis et al. as applied to claim 13 above, and further in view of Khair et al. (U.S. Patent 6,718,757).

The modified method of Igarashi discloses the invention as cited above, however, fails to disclose that the regeneration process includes feeding nitrogen dioxide into the filter.

As shown in Figure 4, Khair et al. disclose an integrated method for controlling diesel engine emissions in CRT-LNT system comprising a soot filter (410b) and an oxidation catalyst (410a). As indicated on lines 18-23 of column 8, Khair et al. teach that it is conventional in the art to utilize the oxidation catalyst to convert NO in an exhaust gas stream into NO₂, which are fed into the soot filter to react with trapped soot particles to form elemental nitrogen and carbon

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dioxide. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the oxidation catalyst taught by Khair et al. in the method disclosed by Igarashi, since the use thereof would have been routinely practiced by those with ordinary skill in the art to effectively remove harmful soot particles from the exhaust gas.

Response to Arguments

6. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Prior Art

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of two patents: Jeong et al. (U.S. Patent 6,010,547) and Styles (U.S. Patent 7,131,263) further disclose a state of the art.

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TMN
August 1, 2010

/Tu M. Nguyen/
Tu M. Nguyen
Primary Examiner
Art Unit 3748